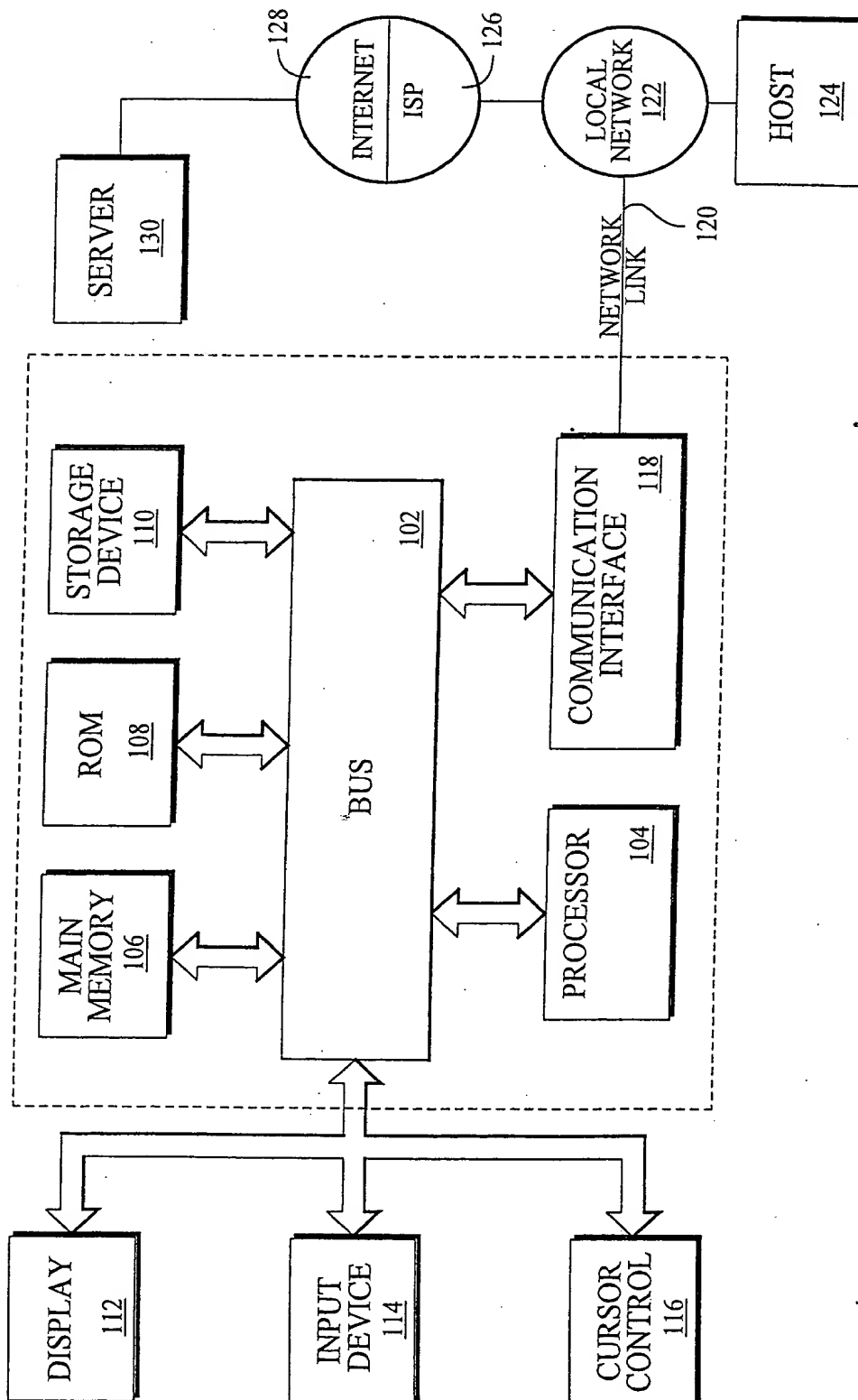


1/12



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Fig. 1

2/12

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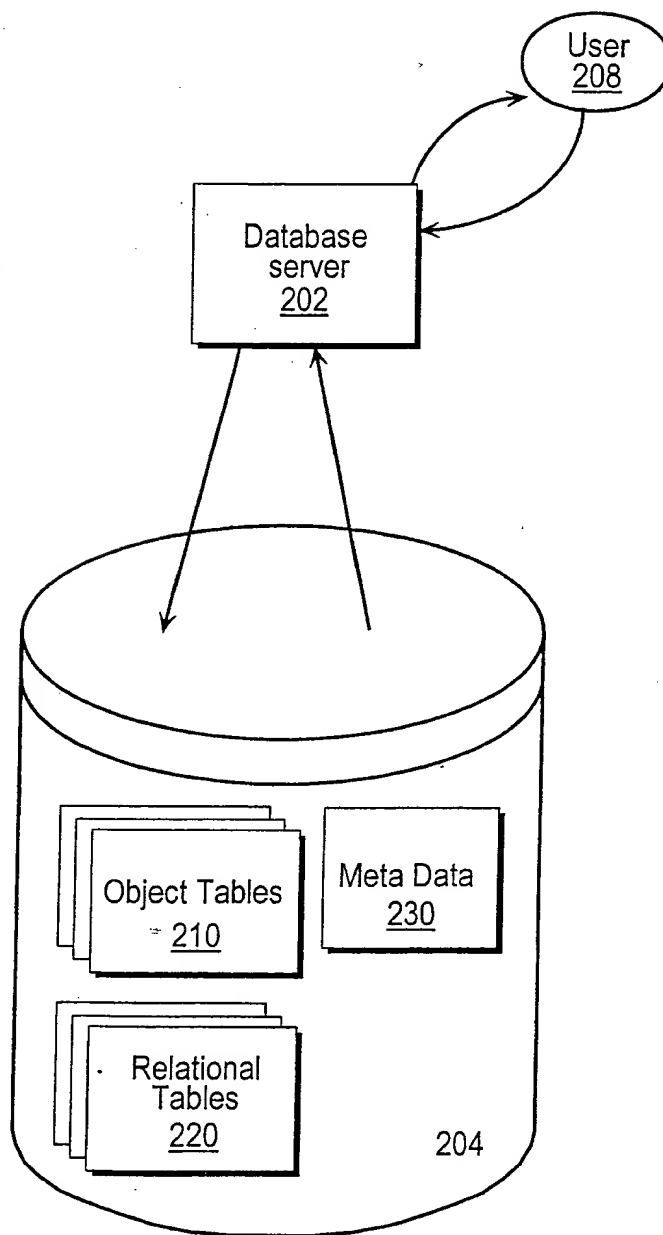


Fig. 2

3/12

FORMER- EMPLOYEE Table Definition

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Create Table FORMER EMPLOYEE (

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NAME VARCHAR (30),
SSN VARCHAR (11),
STATE VARCHAR (2));

Fig. 3A

Table FORMER_EMPLOYEE

Name	SSN	State
Frank Doe	999-99-997	CA
Jane Doe	999-99-998	CA

Fig. 3B

4/12

OT_EMPLOYEE

Create Type OT_EMPLOYEE As Object (

NAME VARCHAR2 (20),
SSN VARCHAR2 (11),
STATE REF STATE));

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Fig. 36

Table CURRENT_EMPLOYEES

OID	Name	SSN	State
000000	John Doe	999-99-9999	CA
000001	Jane Doe	999-99-9998	AL

308

Fig. 3D

5/12



Create View OV_FEMPLOYEE of OT_EMPLOYEE
With Object OID (SSN)
As Select NAME, SSN, STATE
From FORMER_EMPLOYEES

Fig. 3E

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360

OID	NAME	STATE
999-99-9999	Frank Doe	CA
999-99-9998	Jane Doe	CA

Fig. 3F

+

6/12

Create View OV_STATE_FEMPLOYEE of OT_SEMPLOYEE

AS Select FORMER_EMPLOYEE. NAME,
FORMER_EMPLOYEE. SSN,
STATE. NAME

From FORMER_EMPLOYEE,
STATE

Where FORMER_EMPLOYEE. STATE=STATE. ABBR;

Fig. 3G

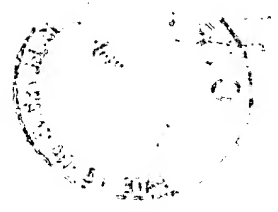
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TABLE STATE

NAME	ABBR
California	CA
Alabama	AL

Fig. 3H

7/12



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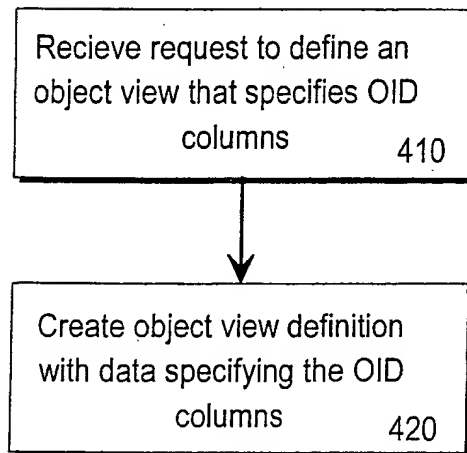


Fig. 4A

8/12

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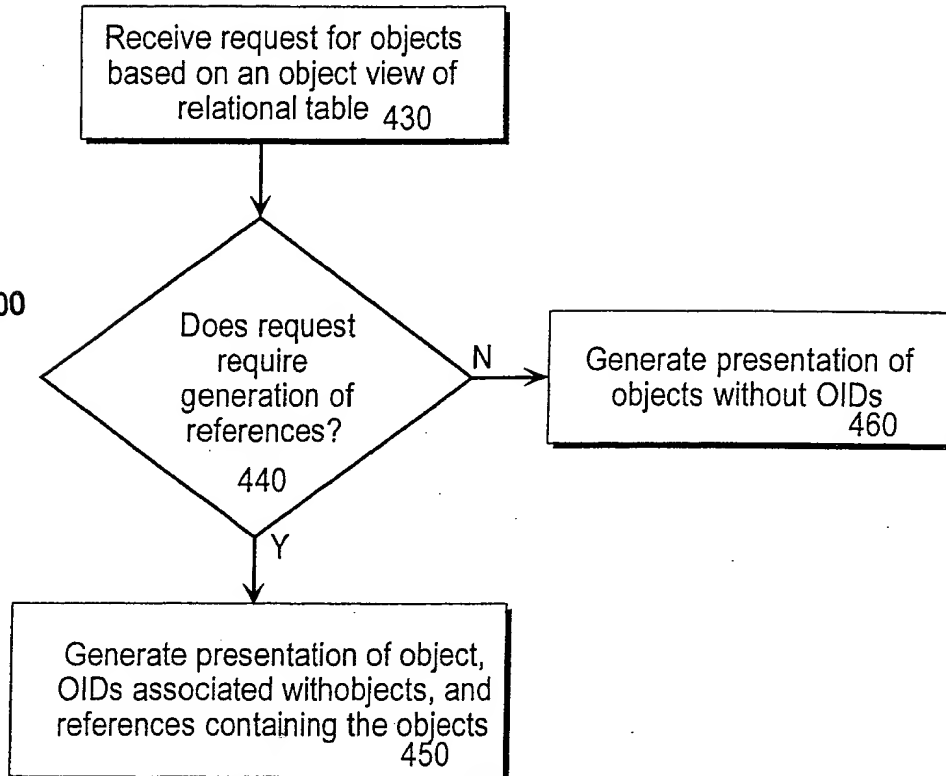


Fig. 4B

9/12



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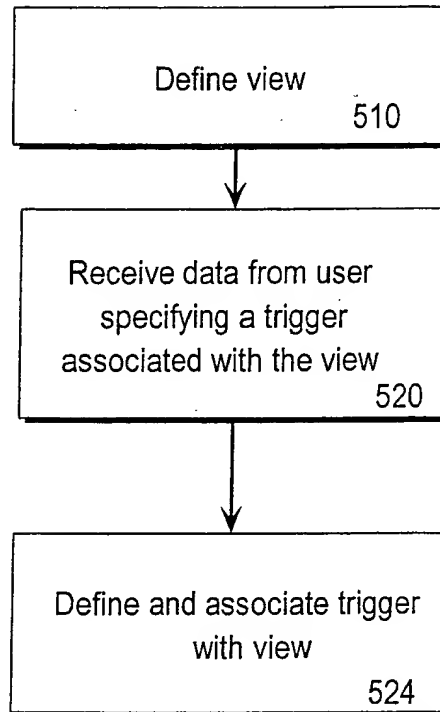


Fig. 5A

10/12

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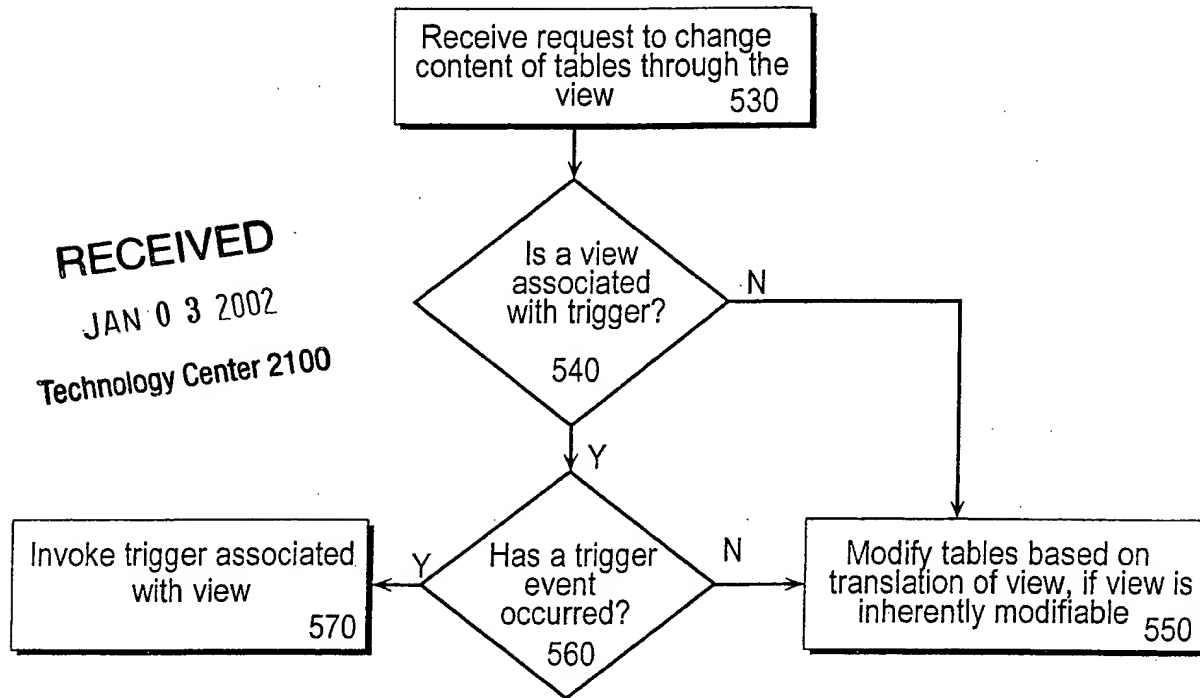


Fig. 5B

11/12

Create OV_PERSON of OT_FAMILY As

Select

OT_PERSON_ID(p.NAME, p.SSN),

CAST (Multiset (Select * From PERSON p1 Where

p.FATHER_SSN = p1.SSN Or

p.MOTHER_SSN = p1.SSN)

As PARENTS),

CAST (Multiset(Select * From PERSON p2 Where

p.SSN = p2.FATHER_SSN Or

p.SSN = p2.MOTHER_SSN)

AS CHILDREN)

From PERSON p;

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Fig. 6A

Create Type OT_FAMILY as Object (
PERSON_ID OT_PERSON_ID,
PARENTS LIST_OF_PARENTS,
CHILDREN LIST_OF_CHILDREN,
);

Fig. 6B

12/12

Create Table PERSON (
NAME VARCHAR(30),
SSN VARCHAR(9),
FATHER_SNN VARCHAR(9),
MOTHER_SNN VARCHAR(9),
);

Fig. 6C

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Create Type OT_PERSON_ID as Object (
NAME VARCHAR(30),
SSN VARCHAR(11)
);

Fig. 6D

Create LIST_OF_CHILDREN as Table of OT_PERSON_ID;

Fig. 6E

Create LIST_OF_PARENTS as VARRAY(2) of OT_PERSON_ID;

Fig. 6F